

AETIOLOGY OF ECTOPIC PREGNANCY

(based on 256 cases)

BY

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The cause of ectopic pregnancy is still obscure. Various theories have been suggested and different workers have produced some facts in support of particular factors responsible for the causation of ectopic pregnancy. In spite of the different reports in the literature the problem still requires further clarification. With a view to explore the aetiology of ectopic pregnancy, a study of 256 cases was undertaken by the author. These cases were admitted in the Eden Hospital, Medical College, Calcutta, during the period from 1942 to September 1954. Out of these 256 cases, 241, i.e., 94.1%, were tubal pregnancies, 10 were abdominal, 3 ovarian, 1 broad ligament and 1 accessory horn pregnancy.

TABLE I
Varieties of Ectopic Pregnancy

Total no. of cases	..	256
Tubal pregnancies	..	241 (94.1%)
Single	232	
Bilateral	4	
Repeated	2	
Tubal uterine	3	
Abdominal pregnancies	..	10
Ovarian pregnancies	..	3
Broad ligament pregnancies		1
Cornual pregnancies	..	1
Cervical pregnancies	..	nil

Based on a paper presented at the 8th All India Obstetric & Gynaecological Congress held in Bombay, 1955.

I shall present the factors, which bear aetiological significance, from the study of this series of 256 cases.

Aetiological Factors

1. *Increased Incidence.* During the years 1942, 1943 and 1944 the incidence of ectopic pregnancy was 0.31, 0.12 and 0.19 per cent of the confinements, whereas during the years 1952, 1953 and 1954, the incidence rose to 0.52, 0.63 and 0.65 per cent (average .6%). This means 3 times increase in the incidence (vide Table II). Krohn (1952) also found 4 times increase in the incidence compared to 1942, i.e. before the advent of penicillin. Magdi from Cairo and Beecham from New Orleans also found increased incidence. This is explained by the fact that penicillin is keeping more tubes with salpingitis patent so that fertilisation is possible but progress of the fertilised ova is restricted to the damaged tubes.

2. *Age.* Table III shows that cases were distributed in all age groups and age does not seem to be a significant factor.

3. *Parity.* Table IV shows the incidence of cases according to parity; no para was an exception and parity does not seem to bear aetiological significance.

TABLE II
Incidence According to Year

Year	Cases	Confinements	Incidence
1942	5	1564	.31%
1943	3	2333	.12%
1944	6	3096	.19%
Average			.2%
1952	41	7804	.52%
1953	53	8378	.63%
1954	38	5864	.65%
Average			.6%

TABLE III
Incidence According to Age

Age Group	Cases
15-25 Yrs.	123 cases
26-35 "	114 "
36-45 "	19 "

TABLE IV
Incidence According to Parity

Parity	Cases
Para 0	42 cases
Para 1	57 "
Para 2 & 3	77 "
Para 4 & 5	42 "
Para 5 & above	26 "

4. *History of Pelvic Inflammation* was clearly obtained in 14.4% of this series. Marchetti (1946) found 26.9% in New York Hospital whereas Carabba (1952) had 18% of his series.

5. *History of Pelvic Operations*, like Gilliam's ventri-suspension, appendicectomy and D & C for sterility, was present in 7.5% of the cases. Marchetti had 25% in his series and Priddle found 10.3% of laparotomies.

6. *Sterility*. 16.4% of our cases were found in nulliparae with long years of sterility in the majority. Absolute sterility of 5 years and

more was present in 41.7% of 189 multipara cases. Overall sterility of 5 years or more was present in 44.4% of the series. Priddle (1952) reported 54.1% of 4 years or more sterility while Carabba (1952) found 32% in New York Hospital.

7. *History of Abortion* was present in 14.8% of this series. Schaufler (1945) found 35% of previous abortions and Marchetti (1946) reported 15% of induced abortions.

8. *Naked Eye Appearance of Salpingitis*, like hydrosalpinx tubo-ovarian mass or pyosalpinx, was found in 25.3% in the opposite tube along with evidence of intrapelvic adhesions with the uterus and the tube suggesting old pelvic peritonitis.

9. *Histological Examination* of the pregnant tube showed chronic salpingitis in 55% of the tubes examined. Johnson 1951 reported 51% incidence of salpingitis in his series. Ward (1951) found salpingitis in 33.5% of the tubes (Table V).

TABLE V
Abnormalities in Affected Tube

Long tortuous tubes	3
Cysts	2
Chr. salpingitis	20/37 (55%)
Chorionepithelioma	2 cases
NATURE OF THE OPPOSITE TUBE	
Total cases	241
Chr. salpingitis	61 (25.3%)
Interstitial salpingitis	33
Hydrosalpinx	18
Pyosalpinx	1
Tubo ovarian mass	9

10. *Congenital Abnormalities of the Tube* like abnormal length, tortuosity were found in 3 of our cases. Whitmore from Boston (1950) and Thoreck reported isolated cases of

tubal pregnancy in accessory and supernumerary tubes.

11. *Congenital Abnormalities of the Uterus* like bicornuate uterus was found in one case.

12. *Uterine Fibroids* were found in 2 cases. Priddle *et al* (1952) came across 4 cases of uterine fibroids in a series of 136 cases. Unless fibroids produce mechanical obstruction they may not have any aetiological significance.

Discussion

From the analysis of the data of the present series it appears that defect in the transmission of the ovum through the tube is an important aetiological factor in the majority of the cases. The tubal defect is mainly due to salpingitis. Histological examination of the pregnant tube showed chronic salpingitis in 55% of the series. Examination of the serial section of the tube and thorough scrutiny are likely to give more valuable information than casual examination of a particular part of the tube. Examination of the opposite tube revealed evidence of inflammation in 25.3% of the series. The author feels that sufficient care and attention should be given to examination of the contralateral tube during operations. Apart from throwing light regarding the aetiology, conservation of an apparently unhealthy tube would mean chance of repeated ectopic pregnancy as well as sterility after ectopic pregnancy.

Sterility is an important predisposing factor. Allan Grant found ectopic pregnancies to be 7 times more common in patients attending sterility clinic than the usual incidence.

Ectopic gestation has been found 25 times more commonly in patients treated for tubal blockage with high pressure insufflation than in general and it is known that tubal blockage treated by salpingostomy is likely to be followed by ectopic pregnancy. Now that treatment of tubal sterility by antibiotics, insufflation and salpingostomy are being employed more freely the susceptibility to ectopic pregnancy is expected to rise. Besides tubal patency, tubal physiology should not be ignored while treating sterility cases.

Tubal endometriosis in association with interstitial tubal pregnancy has been reported by Wist who collected 39 cases from the world literature and added 5 of his own. In our 8 cases of interstitial pregnancy we could not find evidence of endometriosis. In the interstitial variety of tubal pregnancy adenomyosis may be an important causative factor by producing mechanical obstruction to the ovum.

Tuberculous salpingitis with tubal pregnancy has been reviewed by Pendl who collected 36 cases and added one of his own. There was none in this series. It is controversial whether tuberculosis has any aetiological significance. Sterility is common with tubercular salpingitis, but when tube is patent the pathological tube may behave in the same way as in pyogenic salpingitis to favour ectopic nidation of the ovum. In view of the recent treatment with antibiotics it will be interesting to watch if the incidence rises.

Decidual reaction in the tube reported by Wist (1954) is likely to be

the result rather than the cause of the tubal pregnancy.

Heiskala in 1949 reported a case of abdominal pregnancy with ovum implanted on the fundus uteri showing endometriosis in uterine musculature. In our 10 abdominal pregnancies, no evidence of endometriosis was found.

Histological examination of the ovum by Horman (1949) revealed no significant abnormality. There are practical difficulties in obtaining the intact ovum for examination.

Acknowledgment

My thanks are due to Dr. M. N. Sarkar, Principal - Superintendent, Medical College Hospitals, for use of hospital records and to Dr. S. C. Bose, Prof. Director of Midwifery, Medical College, Calcutta, for valuable suggestions.

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